

Wright Brothers 1900 Kite Model

DESIGNED BY Roger Storm, NASA Glenn Research Center

MATERIALS

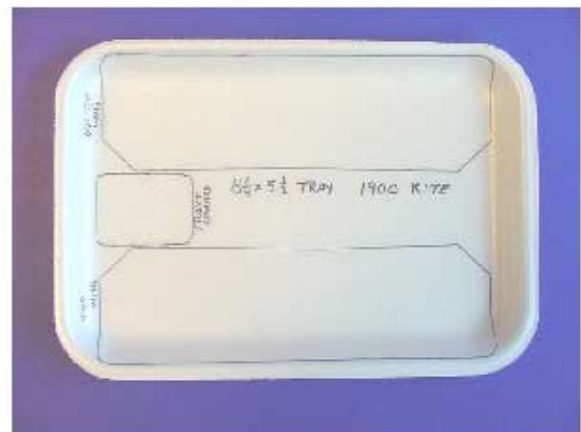
- Styrofoam meat tray, minimum 8.5 x 5.5, preferably white
- 30-35 toothpicks
- white glue (low temperature glue gun also very helpful)
- scissors
- Exacto knife or razor blade (adult help here)
- cardboard or board to cut on
- fine tip permanent black marker
- ruler
- army men (optional)

GENERAL DIRECTIONS

- Download and print a copy of the pdf file ["1900 template"](#).
- Cut out all pieces on the heavy lines.
- Do all razor knife or razor blade cutting on the board or cardboard to protect your working surface.
- The finished model is for display and is not designed to fly.

PROCEDURE

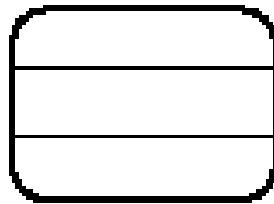
1. Carefully trace the wing and elevator shapes on the meat tray as shown. Be sure the front edges of the wings go about 2/3 up the curved sides of the tray and be careful not to use the middle of the tray as it usually contains a logo. Use the emery board to smooth the cut edges.



From Wright Brothers 1900 Kite Model Instructions
<http://www.grc.nasa.gov/WWW/Wright/ROGER/1900model.htm>

1900 Kite

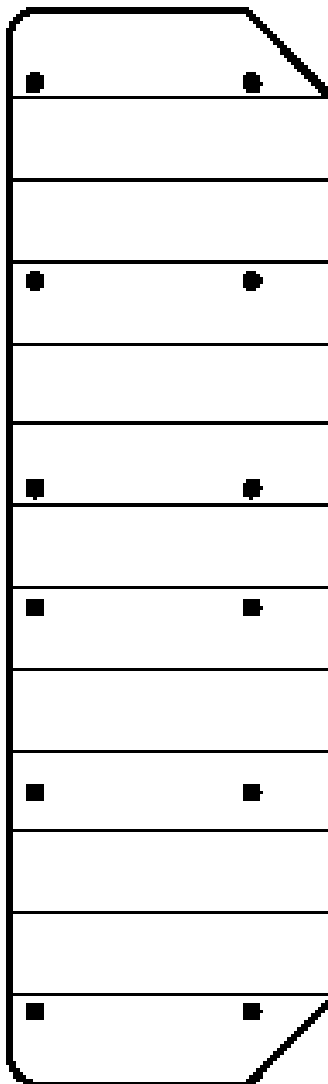
Elevator



Scale: 1 cm = 1 ft

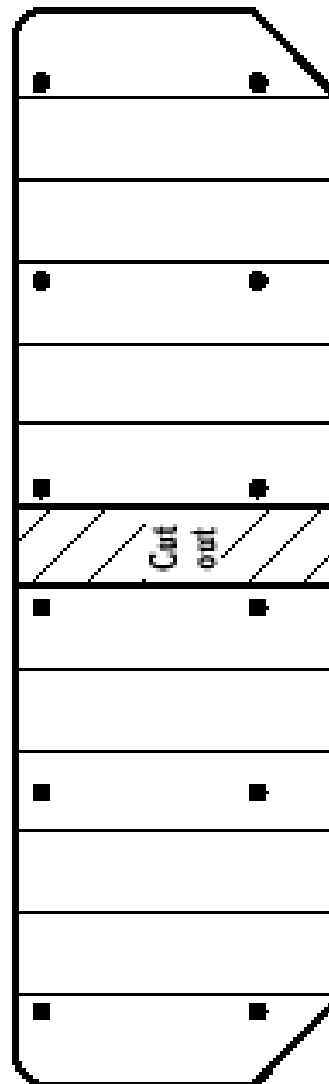
Top wing

Front edge curved



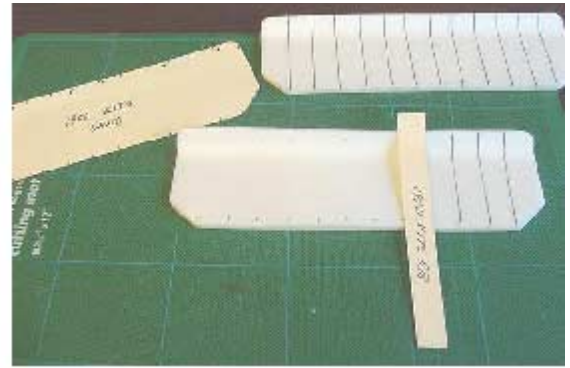
Bottom wing

Front edge curved



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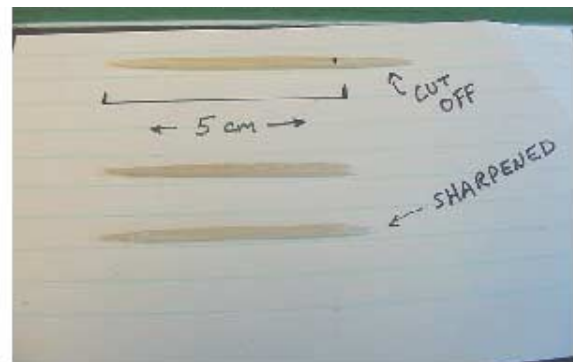
2. Use a black marker and template to make the rib lines on the tops and bottoms of the wing and elevator sections. Do this with a straight edge made from a manila folder so the end can be bent to conform to the rounded shape of the styrofoam. A "Sharpie" ultra fine penworks best for drawing the rib lines.



3. Cut off the parts of the lower left and right wing only as shown by the dotted line on the template. Cut two toothpicks in half and sharpen the cut ends. Dip the ends in glue and stick them in the cut edges to join the lower wing halves, leaving a 1.5 cm. gap.



4. Make 12 spars by cutting toothpick to a 5 cm. length and then slightly sharpen the cut ends.



5. Use the wing template and a sharp toothpick to mark the holes for the spars on the top surface of the lower wing and the bottom surface of the upper wing.

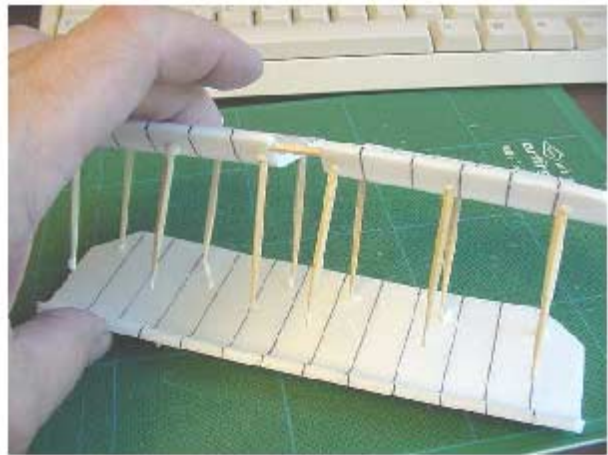


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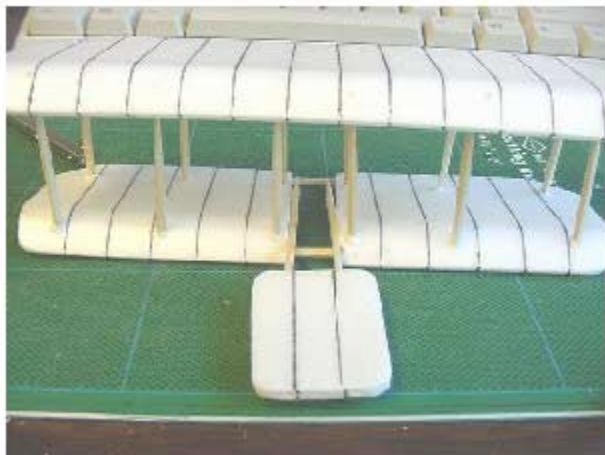
6. Dip toothpicks in glue and insert them in the spar holes of the lower wing. Be sure they are standing up straight and allow the glue to dry.



7. Now put a little glue on the top end of each spar, turn the lower wing upside down, and insert the spars into the underside of the upper wing, working from one end to the other. This takes some effort to get everything in the right place and is easier to do with two people.



8. Stick two toothpicks in the end of the elevator and glue this assembly to both sides of the gap in the lower wing.

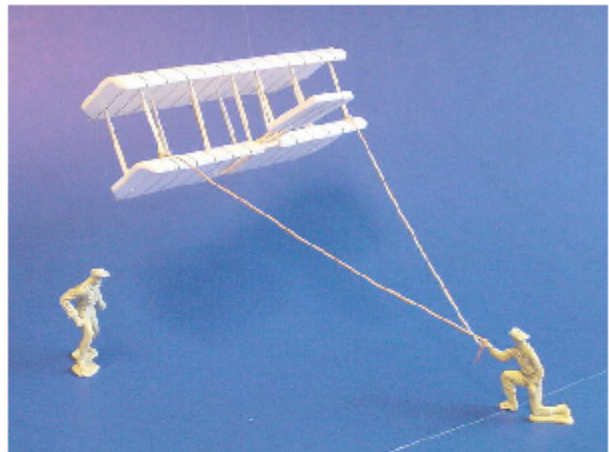


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9. (Optional) Cut enough 1.5 cm. pieces off of toothpicks to stick into the back edge of each wing on the lines to simulate the ribs.



10. For display the kite can be hung on a thread and strings could be added to be held by a kneeling army man. ADULTS: An exacto knife was used to trim away the guns and helmets. Using a glue gun, the arms and legs can be cut and swapped or repositioned. Five-minute epoxy works better.



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by [Tom Benson](#)

Please send suggestions/corrections to: benenson@grc.nasa.gov

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